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Tabernaemontani×*P. rubens*, *Syringa vulgaris*×*S. persica*, and Mirabilis forms including *M. Jalapa*×*M. tubiflora* and *M. Jalapa*×*M. longiflora*. In some of these the usual irregularities in the reduction mitoses of sterile hybrids are reported. In *Potentilla Tabernaemontani*×*P. rubens* the x number of chromosomes is 16. The hybrid shows no difference from the parent *P. Tabernaemontani* in pollen formation, except that the former produces a larger number of imperfect pollen grains. In *P. rubens* nearly all the pollen grains are good. The latter is a constant species, while the former is very variable or "mutable." By subjecting this hybrid to etiolation in hothouse temperature, complete sterility was produced. The reduction divisions were apparently normal, but there was a lack of cytoplasm and of chromatin, the scarcity of the former beginning as early as the archesporium stage. Similar but less marked results were obtained by subjecting *P. rubens* to the same conditions. Some of TISCHLER's interesting conclusions, which will be further discussed in the forthcoming paper, may be briefly stated as follows: (1) Sterility of hybrids does not depend upon any form of chromatin repulsion. (2) Sterility results from the fact that two sexual cells are thrown together whose developmental tendencies are not identical. When the individual reaches the critical reproductive stage the disturbance of harmony in its development makes itself apparent. (3) By modification of the external conditions in plants which are not hybrids, the sexual cells may be so influenced as to produce conditions similar to those which result from hybridization. (4) The sterility of hybrids is a purely relative matter. (5) A true splitting or segregation of characters does not occur in the reduction divisions. One of the arguments in support of this conclusion is that certain characters Mendelize which concern not single rudiments but the constitution of the whole of the idioplasm. (6) The assumption that the individual characters are connected with distinct and separated pangens is abandoned. (7) The chromatin is not of exclusive significance as a hereditary substance. (8) There is a specific idioplasm having a definite constitution. (9) A distinction is to be maintained between chromatin and linin. (10) Apogamy is merely an aid in reproduction in cases of pollen sterility, and is not the primary condition to which pollen obliteration is secondary. (11) Similarly, as shown by CORRENS, in species which are passing from the monoecious to the dioecious condition, disturbances similar to those of mutation occur, resulting in contabescence of the anthers or ovaries. (12) There is, as DARWIN believed, a close relation between the sterility of hybrids and that of plants under cultivation. The full account of this work will be awaited with interest.—R. R. GATES.

Anatomy of Araliaceae.—A very comprehensive treatment of the Araliaceae has been published by VIGUIER,[24] dealing with the history of the family, the external morphological characters, and the internal structure of stem and leaf of about sixty genera. Besides being a valuable contribution to the knowledge of plant anatomy in general, the paper offers an excellent proof of the importance of anatomical characters to systematic research. As a matter of fact, the anatomical characters as described by VIGUIER are not only very useful, but to some extent really necessary for gaining a thorough knowledge of this family and its affinities. From an external morphological point of view the Araliaceae exhibit a number of very conspicuous types, represented by herbaceous, frutescent, and arborescent species; among these the herbaceous are of a special interest, and it is to be regretted that the author could not examine the root structure of the very peculiar Panacineae, for example, to which the ginseng belongs. The stem structure seems to be very constant. The cuticle is often thick; the epidermis consists only of a single layer; the cortex is differentiated as an external continuous zone of collenchyma and an inner parenchymatic zone frequently traversed by secretory ducts; the pericycle is stereomatic and forms arches, always accompanied by secretory ducts; the cork develops constantly in the peripheral hypodermal stratum of cortex, the only exception being Echinopanax. A very considerable variation exists in the occurrence of ducts in the pith, of mestome strands in the pith, in the presence or absence of secretory cells (*poches sécrêtrices*) in the secondary hadrome, etc., which is readily noticeable from the anatomical table. The petiole shows also a very characteristic structure, and among the generic characters may be enumerated the arrangement of the mestome in one or several concentric bands; the various disposition of the ducts; the collenchyma continuous or interrupted by cortical, chlorophyll-bearing parenchyma, etc. The structure of the petiole becomes very much complicated when secondary formations set in, as observed in several species. In the blade of the leaf the structure is quite variable, as follows: secretory cells occur only in Gilibertia; the midrib may be composed of several mestome strands arranged in a circle, or may consist only of an arch of leptome and hadrome; hypodermal collenchyma is developed in some genera, but not in others. The anatomical keys are drawn so well that the genera may be easily identified in a number of cases. Ten tribes are recognized by the author, and some new genera have been proposed. Aralidium has been excluded; it lacks secretory ducts and might be placed more naturally as a member of Cornaceae, near Torricellia, Melanophylla, and Kaliphora.—THEO. HOLM.

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[24] VIGUIER, RENÉ, Recherches anatomiques sur la classification des Araliacées. Ann. Sci. Nat. Bot. IX. 4:1–208. 1906.

Embryology of Sechium.—LONGO[25] has found that in the maturing seed of Sechium (Cucurbitaceae) the outer integument enlarges, consisting of homogeneous parenchyma traversed by vascular strands and rich in starch. No "testa" development occurs, but the ovule is closely invested by the pericarp. The outer integument is thus a food-storage region for the embryo, which uses up the endosperm, all of the nucellar tissue, and the inner integument. In germination the cotyledons are differentiated into two regions, intraseminal and extraseminal. The stomata of the two regions differ markedly, in the intraseminal region being more circular in outline and with more circular slits than shown by the decidedly elongated outline of guard cells and slits of the extraseminal region. The differentiation is possibly associated with the differentiation into absorbing and photosynthetic regions.—J. M. C.

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[25] LONGO, B., Sul *Sechium edule* Sw. R. Accad. Lincei **16**:470–472. *figs. 2.* 1907.